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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/848,831	05/19/2004	James F. Bredt	ZCO-100	4783

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EXAMINER	
AHMED, SHEEBA	

ART UNIT	PAPER NUMBER
1773	

MAIL DATE	DELIVERY MODE
10/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/848,831	BREDT ET AL.	
	Examiner	Art Unit	
	Sheeba Ahmed	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,9-11,13-19,22-24,76,78,80,82 and 83* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2-5, 7, 9-11, 13-19, 22-24, 76, 78, 80, 82, and 83* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 19, 2007 has been entered.

Response to Amendment

2. Amendments to claims 1, 4, 5, 10, 11, 13, 16, 76, 78, 80, 82, and 83 have been entered in eh above-identified application. Claims 3, 6, 8, 12, 20, 21, 25-75, 77, 79, 81, and 84-87 are cancelled. **Claims 1, 2-5, 7, 9-11, 13-19, 22-24, 76, 78, 80, 82, and 83 are now pending**.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 2-5, 7, 9-11, 13-19, 22-24, 76, 78, 80, and 83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1, 76, 78, 80, and 83 have been amended to recite that

the thermoplastic particulate material is "selected from the group consisting of acetal polyoxymethylene, polylactide, polyethylene, polypropylene, ethylene vinyl acetate, polyphenylene ether, ethylene-acrylic acid copolymer, polyether block amide, polyvinylidene fluoride, polyetherketone, polybutylene terephthalate, polyethylene terephthalate, polycyclohexylenemethylene terephthalate, polyphenylene sulfide, polythalamide, polymethylmethacrylate, polysulfones, polyethersulfones, polyphenylsulfones, polyacrylonitrile, poly(acrylonitrile-butadiene-styrene), polyamides, polystyrene, polyolefin, polyvinyl butyral, polycarbonate, polyvinyl chlorides, polyethylene terephthalate, ethyl cellulose, cellulose acetate cellulose xanthate, and combinations, and copolymers thereof".

The Markush group lists polyolefins, polyethylene and polypropylene and the Examiner would like to remind the Applicants that a claim in which one ingredient is defined so broadly that it reads upon a second does not meet the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Ferm and Boynton*, 162 USPQ (BdPatApp & Int 1969.). Furthermore, polyethylene terethphalate is listed twice.

In claims 10, 11, and 13 do not positively recite that the adhesive particulate material is a resin or an inorganic material.

Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 82 is rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al. (US 6,780,368).

Liu et al. disclose a freeform fabrication method for fabricating a 3-D multi-material or multi-color object from successive layers of a primary body-building powder, at least a modifier material and a binder powder in accordance with a computer-aided design of the object (Abstract). The method includes, in combination, the following steps: (a) providing a work surface; (b) feeding a first layer of a primary body-building powder material to the work surface (e.g., by using a traditional powder feeder commonly used in selected area sintering and 3-D powder printing processes); (c) operating an electrophotographic powder deposition means to create transferable powder toner images of a binder powder and at least a modifier powder in accordance with the CAD design; (A plurality of modifier powders may form separate toner images or may be combined to form one composite toner image.) (d) transferring the transferable modifier and binder powder images, one image at a time, in a desired sequence onto the first layer of the primary body-building powder material; (e) applying energy means to fuse said binder powder, allowing the resulting fused binder fluid to permeate downward through the first layer of primary body-building material for bonding and consolidating the particles in the first layer to form a first cross-section of the object;

(f) feeding a second layer of a primary body-building powder material onto the deposited first layer and repeating the operating, transferring, and applying steps to form a second cross-section of the object. The binder powder could include a resin composition that can be cured or hardened with heat, ultra violet light, electron beam, ion beam, plasma, microwave, X-ray, Gamma ray, or a combination thereof. Alternatively, the binder powder could include a lower-melting material that can be readily fused to become a fluid. Once permeating through a layer of primary body-building powder material for providing bridges between particles, the binder fluid can be cooled down to below the melting point of the binder material and be solidified. If the binder contains a photo-curable adhesive composition, the pre-heat energy intensity and the energy of the imposing light source (heat and light constituting the energy means) should be provided in such a fashion that successive layers can be affixed together to form a unitary body of the 3-D object. If the binder contains a heat-fusible material composition, a complete body-building powder layer can be pre-heated by other heat sources (e.g., infrared, IR) disposed near the object-building zone to a temperature sufficient for melting the binder composition. After a selected duration of time, this heat source may be switched off to allow the binder fluid (already permeating through a layer) to solidify. If the layer of primary body-building material is already mixed with component compositions of a binder (excluding a photo-initiator, for instance), the electro-photographic powder deposition means may be used to transfer an image of the photo-initiator powder to the positive region of the layer. In the presently invented method, the photo-curable binder may consist of such adhesive

compositions as a base resin, a hardening or cross-linking agent, a photo-initiator, a photo-sensitizer, and possibly with additional catalyst and/or reaction accelerator. All of these compositions, if in a powder form, may be mixed together to form a complete binder adhesive mixture. The powder inside a powder feeder may comprise a primary body-building material (fine particles), additives (physical or chemical property modifiers), and secondary ingredients (selected compositions of a binder adhesive). In this method, the primary body-building powder may be composed of one or more than one type of fine particles. The particle sizes are preferably smaller than 100 microns. The primary body-building powder may be selected from the following three basic types of powders and include fine particles of a primary body-building material selected from polymers, ceramics, glass, metals and alloys, carbon, and combinations thereof. The polymers may be thermoplastic (e.g., ***polyvinyl chloride***) or thermosetting (e.g., polyimide oligomer or prepolymer powder). Both the primary body-building powder material and the modifier powder may be selected from a broad array of materials including various organic (including polymers) and inorganic substances (including ceramic, metal, glass, and carbon based materials) and their mixtures. All limitations of claim 82 are disclosed in the above reference.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2-5, 7, 9-11, 13-19, 22-24, 76, 78, 80, and 83 are rejected under 35 U.S.C. 102(b) as being anticipated by Lauchenauer (US 4,649,077).

Lauchenauer disclose a heat activatable adhesive formed from at least two components each in the form of discrete, flowable particles which are capable of adhering in abutment of one particle with another to provide an open structured, porous matrix. The adhesive may be in the form of a sheet formed by blending the particles of each component, applying the mechanical mixture to a supporting sheet, heating the mixture and supporting sheet to the temperature at which the material with the lowest tackifying temperature becomes tacky, applying pressure sufficient to partially flatten the largest particles to a degree such that their minimum dimension is substantially equivalent to the thickness of the layer formed on said support sheet and during or after said pressure application. Components useful as components in the sheet are for instance: thermoplastic polymers: polymeric hydrocarbons (e.g.polyethylene, polypropylene), acrylates, polyesters, polyamides (in particular terpolymers), vinyl compounds (e.g. polyvinylacetates), copolymerisates of olefinic, acrylic and vinylic monomers, block polymers, mixtures of polymers, polyurethanes (including elastomeric polyurethanes), polylactones, polylactames. Any polymer capable of being tackified if heated to a temperature in the range of 50 to 200^{O}C. may be used. The mixture of polymers may contain agents lowering the tackifying temperature or increasing tackiness. One method consists in incorporating an auxiliary agent capable of strongly swelling or even dissolving at least one of the interacting components, this auxiliary agent being released or activated only when proper heat and/or pressure are applied to

the conglomeratic material. The Examples show that a two-component conglomeratic sheet material, capable of being thermally activated, was produced by scattering a mixture of 60% by weight of a high density polyethylene and 40% of a polyamide terpolymer onto a release paper and a mixture of 50 parts of polyethylene and 100 parts of cellulose acetate partly hydrolyzed was applied by scattering particles onto a release paper.

Response to Arguments

6. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (571)272-1504. The examiner can normally be reached on Monday-Friday from 6am to 2pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571)272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sheeba Ahmed
Art Unit 1773
September 30, 2007